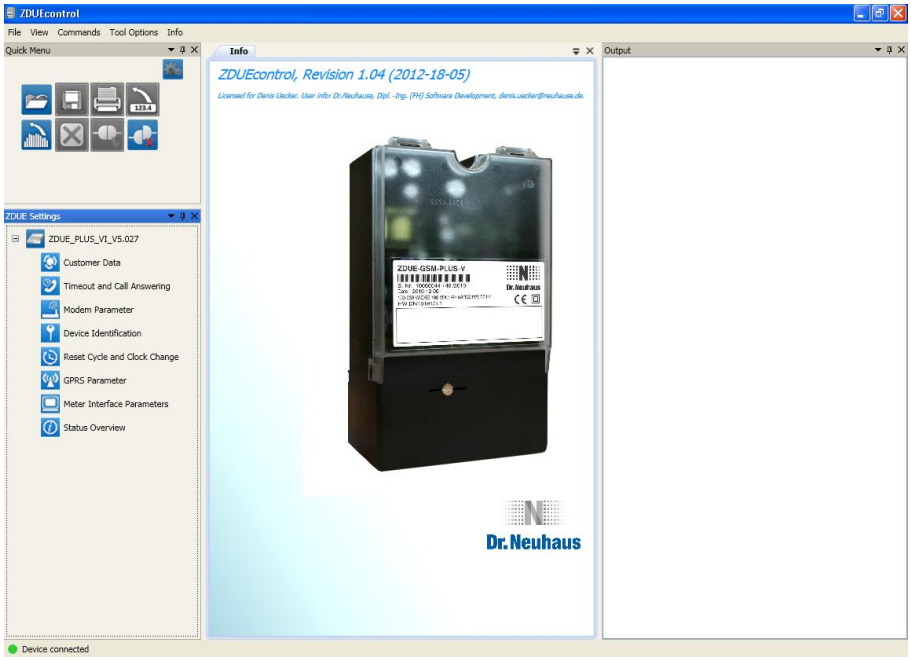
ZDUEcontrol

User Manual



Dr. Neuhaus

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1 Overview

of this manual

This document describes the operation, the functional method and installation as well as technical data of the Software ZDUEcontrol. The following products can be operated with this tool:

- ZDUE-GSM-PLUS-V
- ZDUE-GPRS-PLUS-VI

This applies up to the current firmware that is contained in the ZDUEcontrol software package.

2 Introduction / brief description

The following section should help clarify basic questions about the software: ZDUEcontrol:

What is ZDUEcontrol?

- What are the system requirements for using this software?
- How do I install this software?
- What must I do if I want to update this software?

Note

For additional information, refer tot he user manual of ZDUE-GSM-PLUS-V and ZDUE-GPRS-PLUS-VI.

2.1 What is ZDUEcontrol?

ZDUEcontrol is Windows-based software for parameterisation of the meter modems ZDUE-GSM-PLUS-V and ZDUE-GPRS-PLUS-VI.

Using the software, the necessary communications settings can be transmitted to the connected modem and saved. In addition, the program offers the possibility of reading the data (register values) of the connected meters.

ZDUEcontrol is a 32-bit application based on a 32-bit environment that runs on Windows XP, Windows Vista, Windows Server 2008 and Windows 7. Win CE is not supported.

2.2 System requirements

The requirements for using ZDUEcontrol are listed below:

- IBM PC or compatible PC with 1 GHz Pentium or higher with the following equipment:
    - ≥ 512 MB RAM
    - CD ROM drive
    - At least one free serial interface
    - Supported COM ports: COM1 to COM16
- Hardware components for communication
    - Internal or external analogue or GSM modem for remote parameterisation
    - LAN connection
    - RS232 Parameterisation adapter for ZDUE-GPRS-PLUS-VI and ZDUE-GSM-PLUS-V

Windows XP/Vista/2008/7 (32 bit) with.NET framework 4.0

- Monitor with a minimum resolution of 1024 x 768 Pixel

2.3 Installation / update of ZDUEcontrol

You must have administrator rights on your PC for the installation of ZDUEcontrol. In addition, we strongly recommend that you close all Windows programs before executing the Setup.

The installation is started by executing the **"setupRelease.msi"** file in your installation package. Then follow the instructions of the SETUP program.

A destination folder for the installation directory is recommended by the SETUP program:

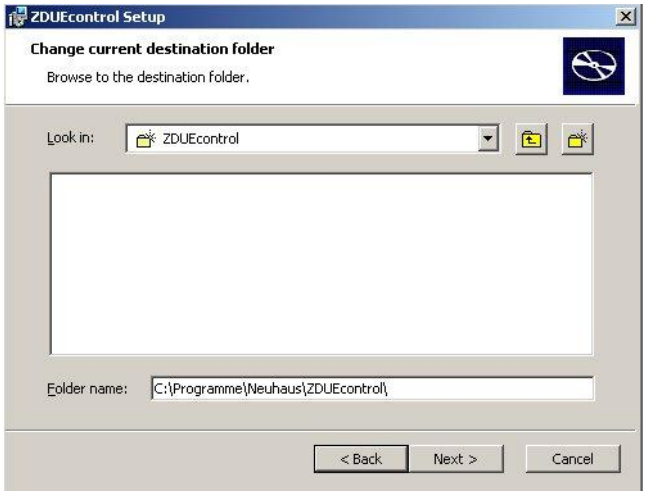


Figure 2-1: Installation – Choosing a directory

In this view you can change the destination folder or create a new folder.

It is not necessary to uninstall the old version for an update. You can simply install the new version in the same directory.

SETUP now checks whether there is sufficient storage capacity available..

Then a communication window opens in which the installation progress is shown.

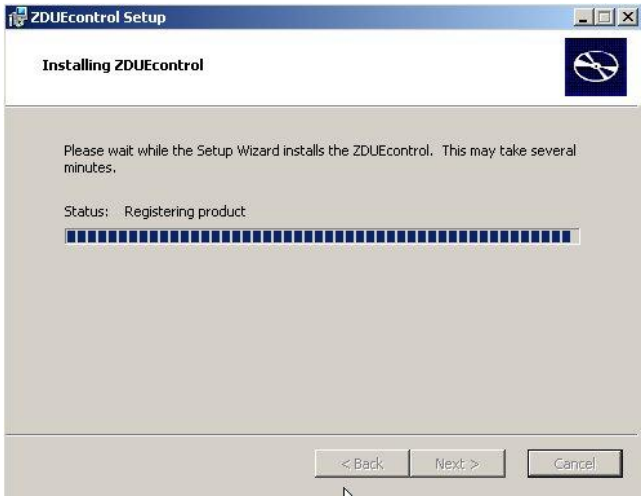


Figure 2-2: Progress

After the successful completion of the installation, SETUP issues a corresponding message:

Figure 2-3: SETUP completed

Depending on the Windows version, you now have a program group (in the Windows **Start** menu under **Programs** -> **Neuhaus**-> **ZDUEcontrol**) and/or a start icon for ZDUEcontrol.

3 OVERVIEW OF SCENARIOS AND WORK STEPS

The procedures for the parameterisation of individual modem types are described in this chapter based on example applications.

3.1 Local configuration of the modem

The local configuration of the modem takes place over the activated RS232 interface. Fort his purpose, the current loop must be closed by a wire bridge between the terminals RTX+ and RTX-. (see User Manual page 28)

The following defaults settings are made with the activation:

Baud rate: 19200

Data bits: 8

Stop bits: 1

Parity: None

Make sure that the settings of the COM port on the connected computer match and switch off any flow control. (Hardware (RTS/CTS), XON-XOFF)

Important: With local parameterisation, no current GSM connection between ZDUE and the control centre may be established at the same time.

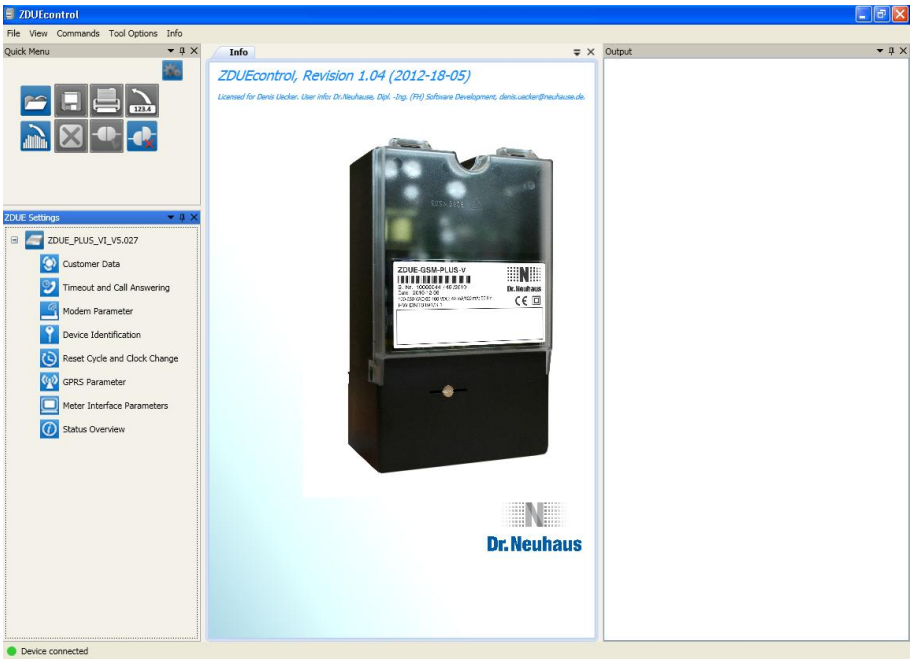
Otherwise the parameters of the CL interface are adopted.

Nows connect the modem using the adapter cable with the COM connection of your computer.

Step 1 ***Program start***

- Select in the Windows **Start** menu -> **Programs** -> **Neuhaus** -> **ZDUEcontrol** -> **ZDUEcontrol**
- Or click on the icon on your desktop

The following startup screen appears after the program starts.



Step 2 Establishing connection

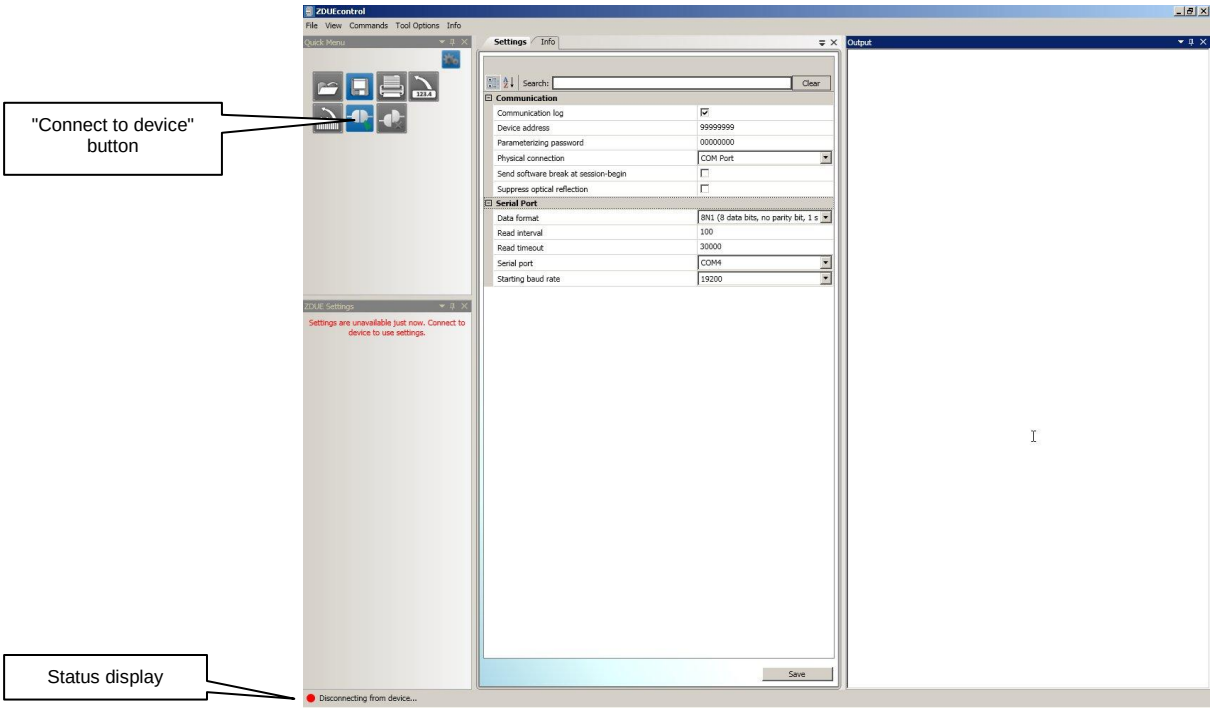
Open the following in the menu bar under:

Tool Options ->Communication Options ->“Settings”

Now adjust the communications settings appropriately and save them.

In the **Quick Menu**, click on the "**connect to device**" button in order to establish the connection.

A successful connection is indicated by the note **"device connected"** in the status bar.



Communication log

When this option is selected, a communication log is automatically created and written to a log file. These log files are located in the ZDUEcontrol main directory in the folder "**Log Files**".

Device address

An IEC1107 address can be entered here, which is automatically sent to the ZDU for all communication. Then the ZDUE only answers if the IEC1107 address sent from ZDUE set matches its parameterised address (default:99999999). If it does not match, the telegram is forwarded directly to the interface(s) to the meter.

Parameterizing password

If a parameterizing password is stored here, it is used for all readings and parameterizations. The query of the parameterizing password at the beginning of the communication does not take place in this case (this is logical with the same parameterizing password for multiple ZDUEs to parameterizing in succession). If no parameterizing password is specified here, it must be entered by the user for each reading and parameterisation.

Physical connection

The communication route over which the connection should be established is defined here.

- Modem (remote): Connection over an analogue modem. A CSD call is made to establish a connection to the ZDUE.
    - The following settings must be adjusted in the Modem tab.
    - Dial number: Dial number of the ZDUE
    - Serial Port: COM Port to which the local modem is connected.
- IP (remote): Connection directly to the IP address of the device. The connection to the ZDUE is established over the IP network.
    - The following setting must be adjusted in the IP tab
    - Server IP address: External IP address of the ZDUE
- COM Port (local): Connection over the local COM port. The connection to the ZDUE is established over a serial cable.
    - The following setting must be adjusted in the IP tab
    - Serial Port: COM Port to which the ZDUE is connected.
- IP Telemetry (remote): Connection over an IPT master. The connection to the ZDUE is established over the IP network.
    - The following setting must be adjusted in the IPT tab
    - Data of the IPT server to be used (IPT master IP, IP master port) and the account created there. (IPT dial number, IPT password, IPT user name)

Send software break at session begin

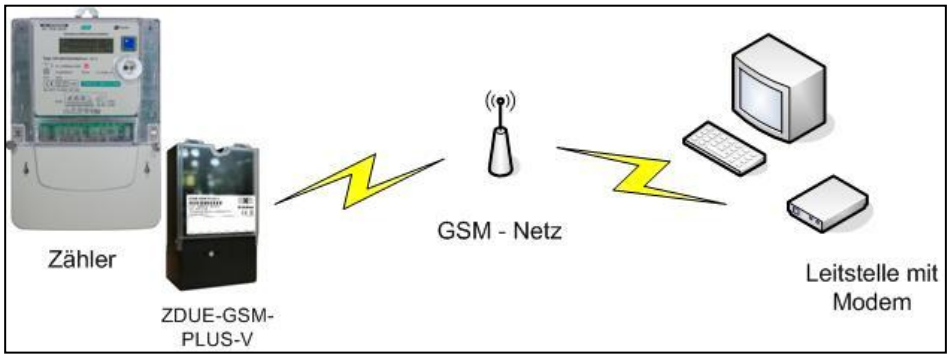
If this function is activated, ZDUEcontrol transmits a break message to the ZDUE before transmission of the device address (IEC address). This can solve problems when establishing the connection.

Suppress optical reflection

Echo suppression is only necessary if a CL1 adapter that does not automatically perform echo suppression is used with the local parameterisation of the ZDUE modem over the CL1 interface or if the PC modem used for remote parameterisation does not support this function.

3.2 Modem configuration for operation in GSM mode

3.2.1 GSM operation

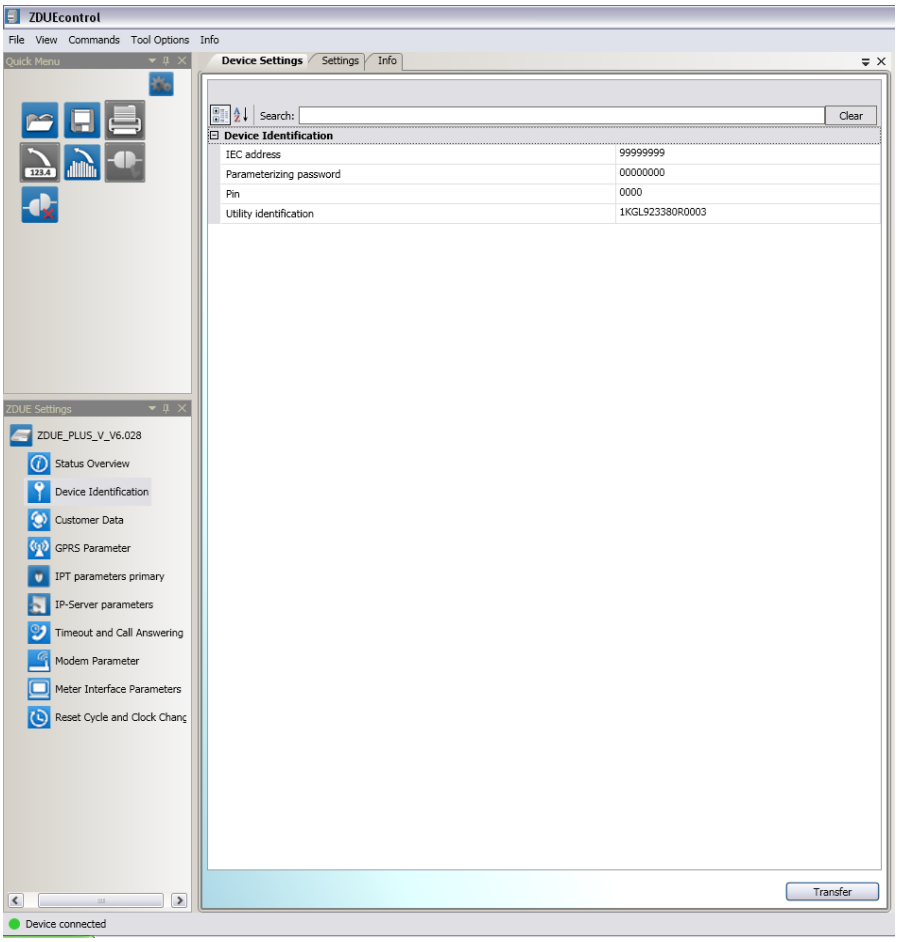


In the "**ZDUE Settings**" view, click on the function

"Device Identification"

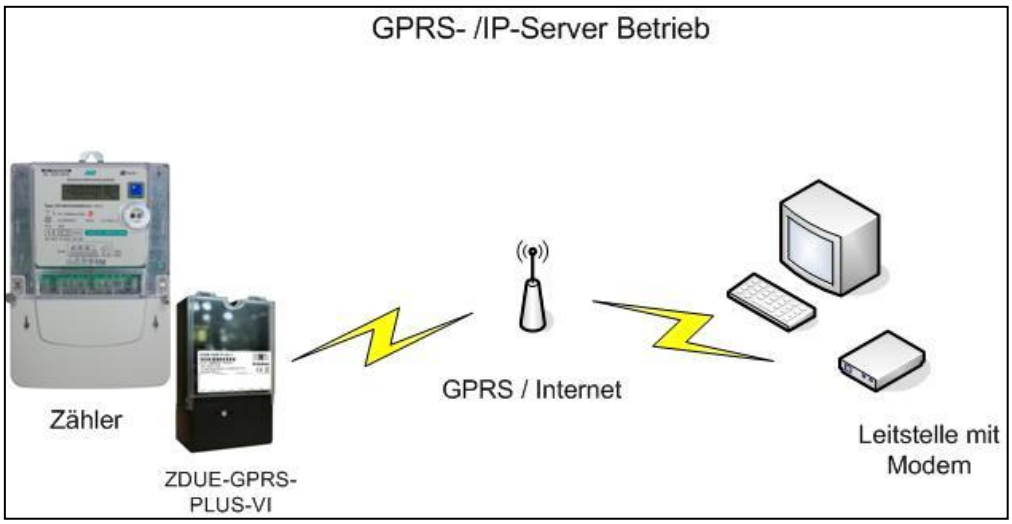
The PIN of the SIM card is configured here.

Click on the PIN field and enter the PIN there. By clicking on the "Transfer" button, the parameters are sent to the modem.



3.3 Modem configuration for operation in GPRS mode

3.3.1 TCP/IP server operation



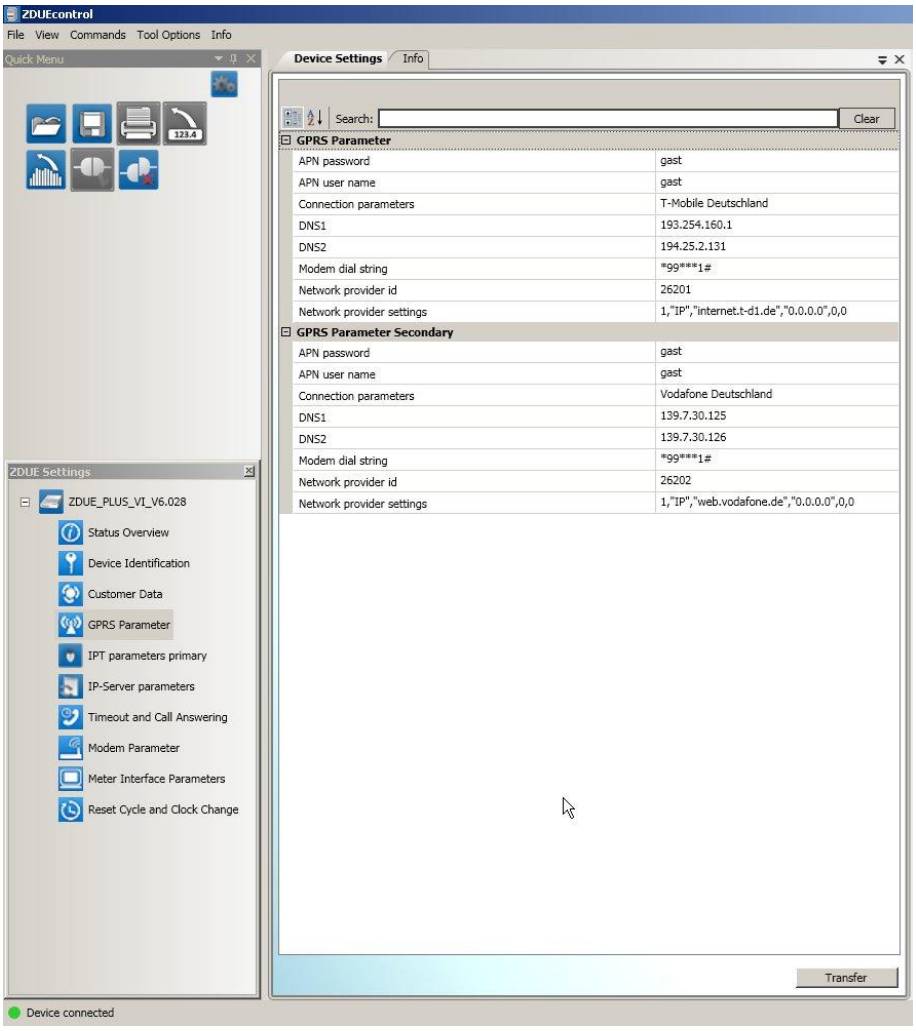
Step 1 Reading and changing GPRS parameters

In the "**ZDUE Settings**" view, click on the function

"GPRS parameters"

Here you have the option of entering and/or changing login information for two network operators. The information from the German providers T-Mobile and Vodafone is entered by default.

Click on the corresponding fields and enter the settings of your network operator. After completion, send the new parameters to the modem by clicking the "Transfer" button.



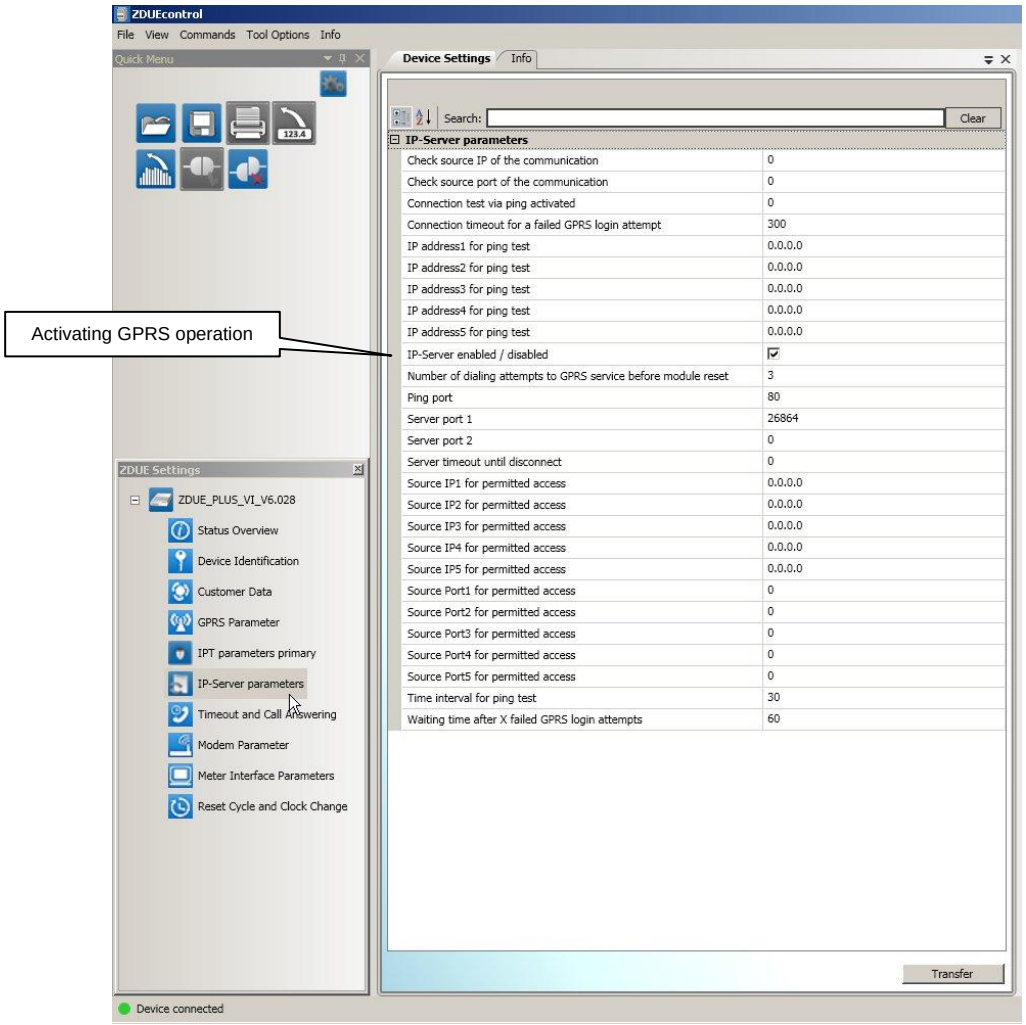
Step 2 Activating the GPRS functionality

In the "**ZDUE Settings**" view, click on the function

"IP-Server Parameter"

To activate the GPRS functionality, the "**IP-Server enabled / disabled**" box must be marked.

Now click the "Transfer" button in order to transfer the setting to the modem.



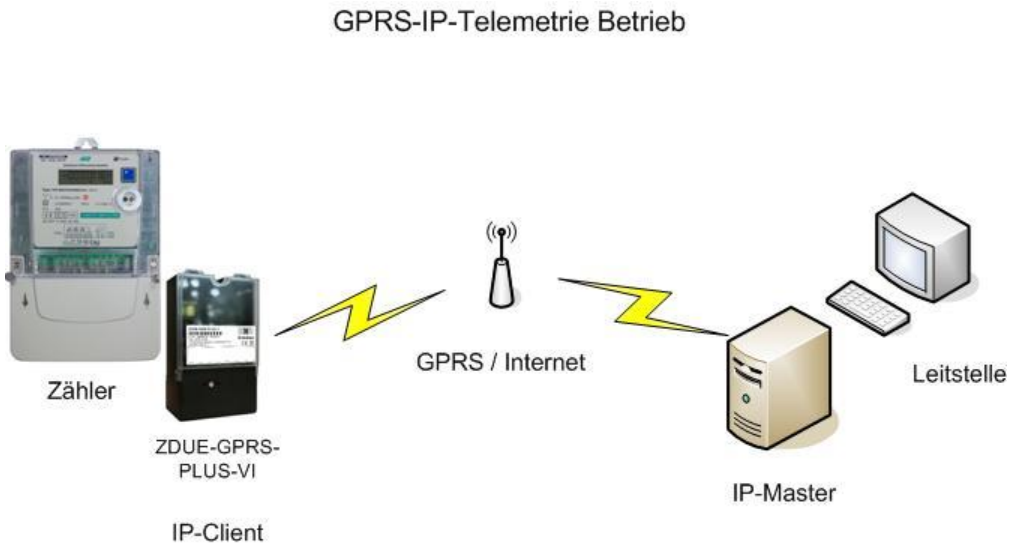
The modem is now ready for GPRS-IP-Server operation and can be used for the remote reading of meter data.

Up to 5 IP addresses can be stored from which the ZDUE accepts connection queries. A port can also be configured for each IP address

- Source IP "n" for permitted access
- Source port "n" for permitted access

If no entries are made here, queries from all IP addresses are accepted.

3.3.2 IP telemetry operation



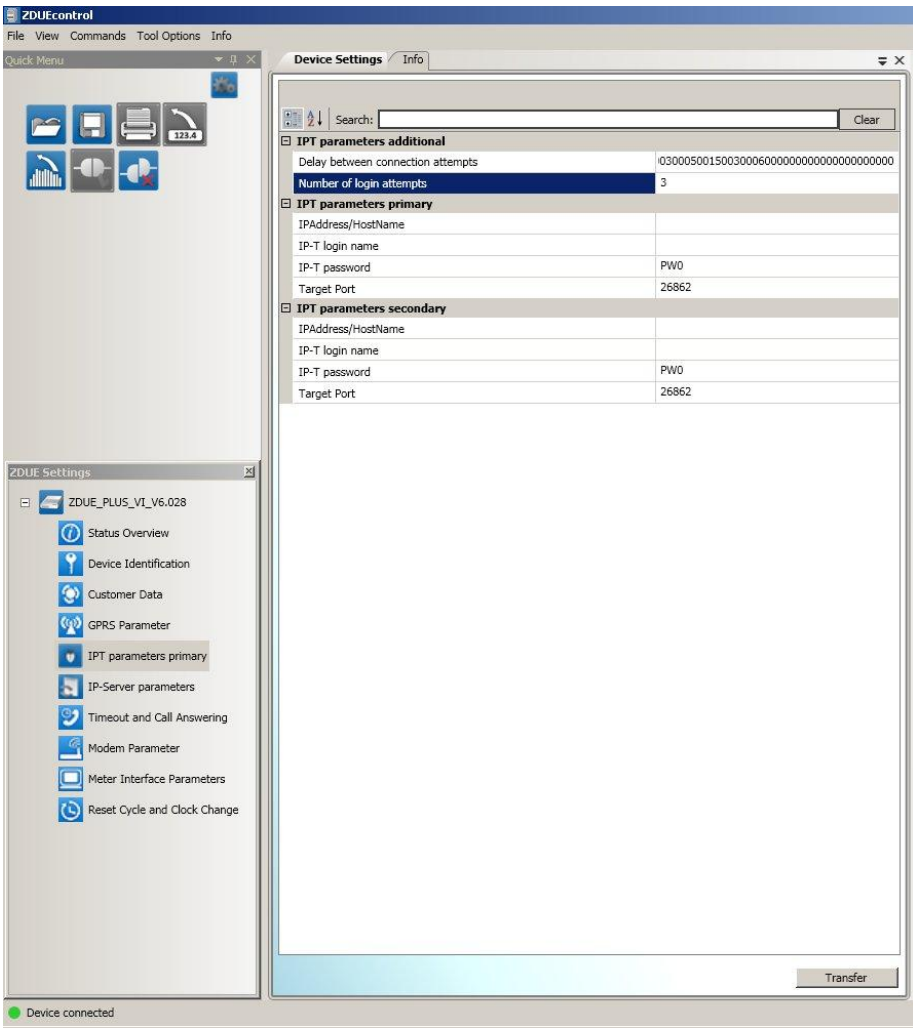
Step 1 Reading and changing TCP/IP parameters

In the "**ZDUE Settings**" view, click on the function

"IPT parameters primary"

In this view the access data of two IPT masters can be entered and transmitted tot he modem.

With entry in the field "**IP Address/Host Name**", the modem is switched to GPRS-IP-Telemetry operation.



Note: IP-Telemetry operation has priority over IP-Server operation.

3.4 Remote configuration of the modem

3.4.1 Establishing connection over the modem

With this setting the connection to the ZDUE modem is established over a modem connected to the control centre PC or a PC-internal modem.

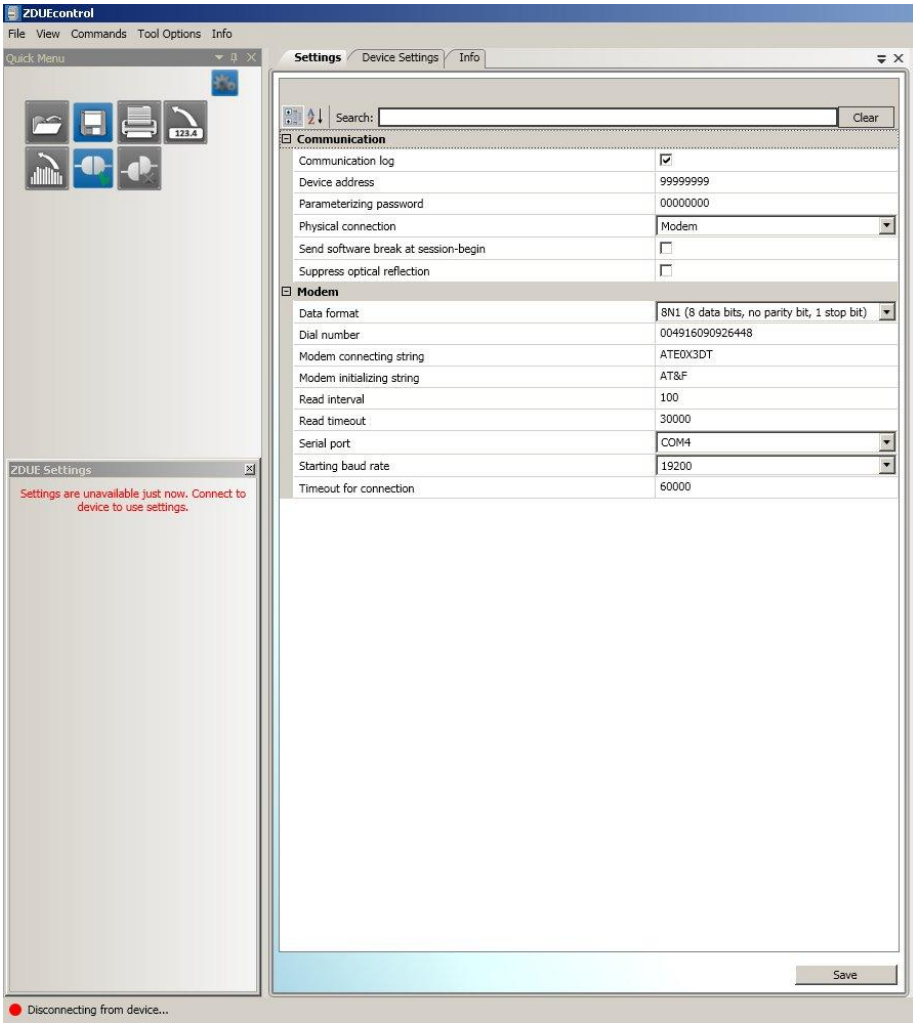
Open the following in the menu bar under:

Tool Options ->Communication Options ->“Settings”

From the pull-down menu under "**Communication**" -> "**Physical connection**", select the setting "**Modem**".

Now adjust the communications settings appropriately and save them. In the **Quick Menu**, click on the "**connect to device**" button in order to establish the connection.

A successful connection is indicated by the note **"device connected"** in the status bar.



Data format

The data format can be selected between *7,E,1* and *8,N,1*, depending on whether parameterisation takes place remotely or locally or whether the PC modem only works with 8,N,1

Dial number

The dial number of the ZDUE is entered in this field.

Modem connecting string

The connection is established over AT commands.

Modem initializing string

The initialising string is shown and edited in this field corresponding to the selected modem. The correct initialising string for the used modem can be found in the manual for the modem.

Read interval

Interval in ms for re-establishing the connection in the event of an error.

Read time out

Time period in ms until a communication is considered faulty with the absence of data

Serial port

The COM port to which the modem at your computer is connected is specified here.

Starting baud rate

Starting baud rate of the ZDUE (default 19,200)

Timeout for Connection

After the last data transfer between ZDUEcontrol and ZDUE, the connection is maintained at first. After the laps of the time period in ms set here, the connection to the ZDUEcontrol is terminated.

3.4.2 Establishing connection over GPRS

With the selection IP, the ZDUE modem can be contacted over GPRS, insofar as it runs in GPRS mode and has installed an IP server.

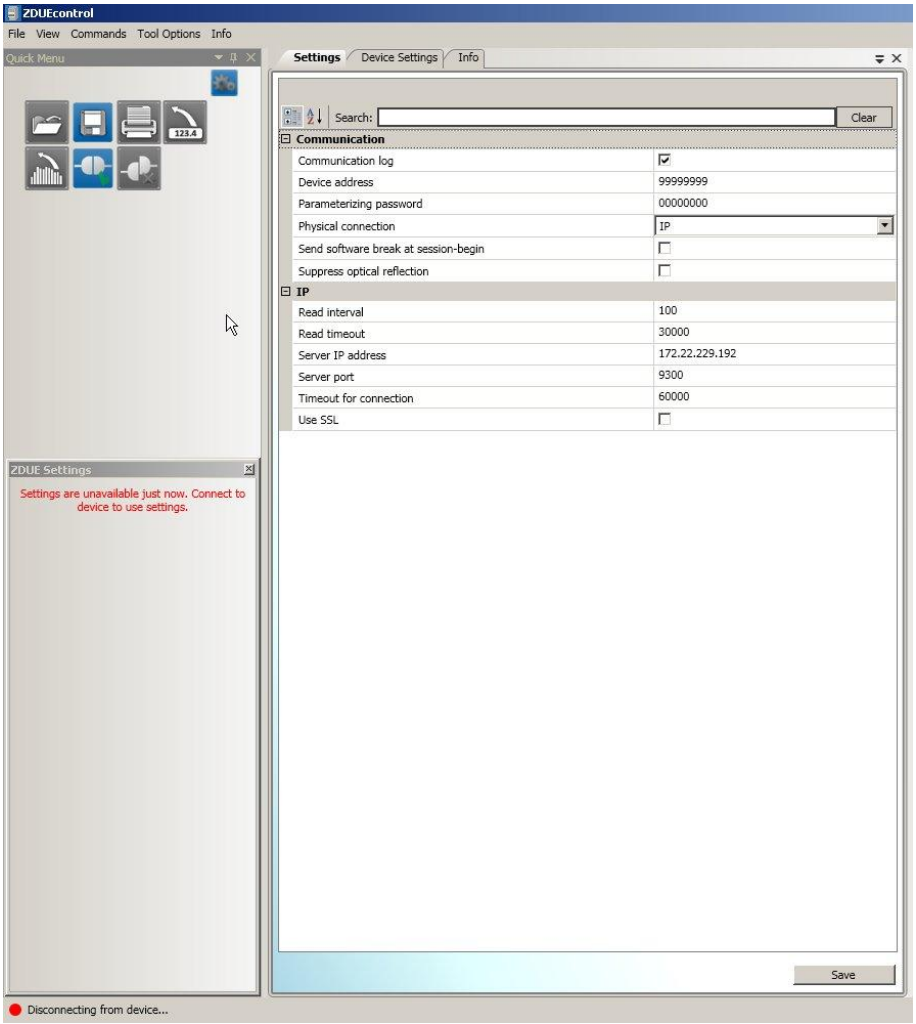
Open the following in the menu bar under:

Tool Options ->Communication Options ->“Settings”

From the pull-down menu under "**Communication**" -> "**Physical connection**", select the setting "**IP**".

Now adjust the communications settings appropriately and save them. In the **Quick Menu**, click on the "**connect to device**" button in order to establish the connection.

A successful connection is indicated by the note **"device connected"** in the status bar.



Read interval

Interval in ms for re-establishing the connection in the event of an error.

Read time out

Time period in ms until a communication is considered faulty with the absence of data

Server IP Address

External IP address at which the ZDUE can be reached.

Server port

TCP port at which the ZDUE modem awaits incoming connection queries of a client.

Timeout for Connection

After the last data transfer between ZDUEcontrol and ZDUE, the connection is maintained at first. After the laps of the time period in ms set here, the connection to the ZDUEcontrol is terminated.

Use SSL

The data transfer is SSL-encrypted

3.4.3 Establishing connection over IP telemetry

With the selection *IP-Telemetry*, the ZDUE modem can be contacted over GPRS, insofar as is connected to the IPT master.

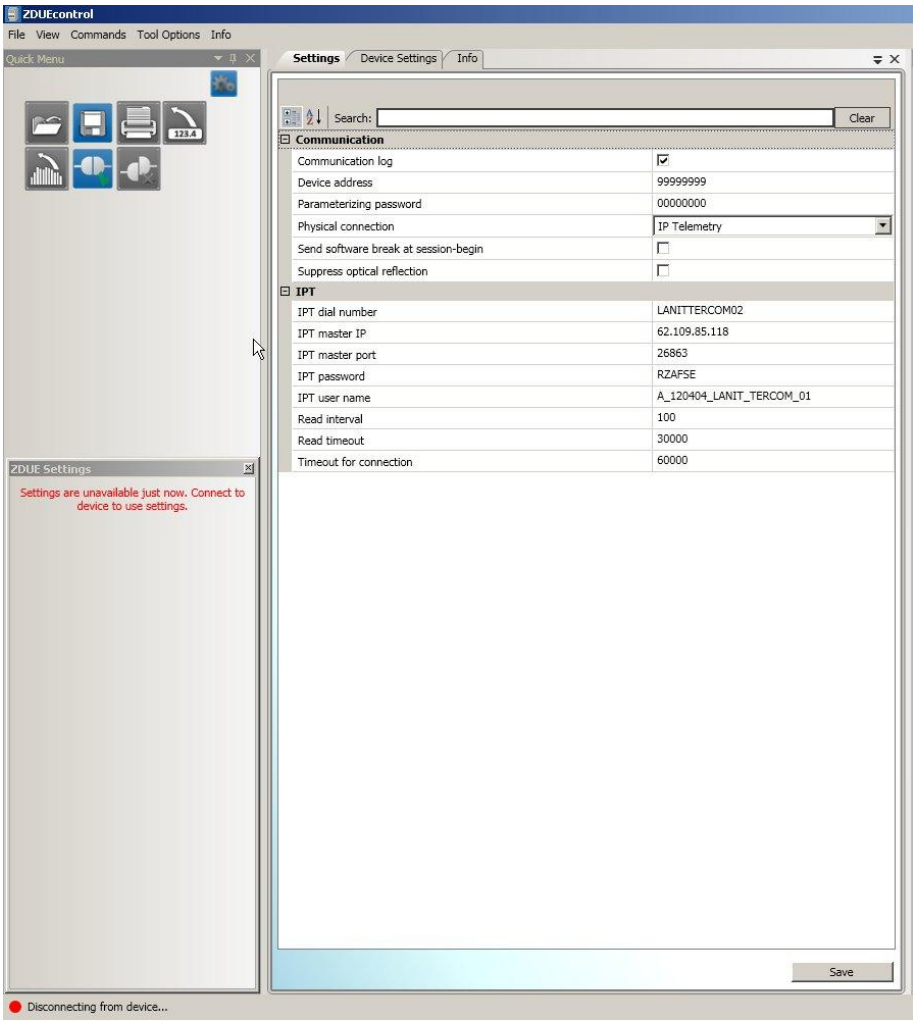
Open the following in the menu bar under:

Tool Options ->Communication Options ->“Settings”

From the pull-down menu under "**Communication**" -> "**Physical connection**", select the setting "**IP Telemetry**".

Now adjust the communications settings appropriately and save them. In the **Quick Menu**, click on the "**connect to device**" button in order to establish the connection.

A successful connection is indicated by the note **"device connected"** in the status bar.



IPT dial number

IPT dial number over which the ZDUE can be reached over the IPT protocol. This dial number has nothing to do with the dial number of the SIM card. This is defined in the IPT master.

IPT Master IP

The external IP address of the IPT master and/or server. The ZDUE-GPRS-PLUS-VI logs in at the IPT master over this address. (e.g. TAINY SwitchingCenter)

IPT Master port

This port is defined in the IPT master for the IPT communication. For TAINY Switching Center V3 that is 26863 (default)

IPT password

The password belonging to the IPT user name. This is defined in the IPT server.

IPT user name

The IPT user name and/or gate name. This is defined in the IPT server.

Read interval

Interval in ms for re-establishing the connection in the event of an error.

Read time out

Time period in ms until a communication is considered faulty with the absence of data

Timeout for Connection

After the last data transfer between ZDUEcontrol and ZDUE, the connection is maintained at first. After the laps of the time period in ms set here, the connection to the ZDUEcontrol is terminated.

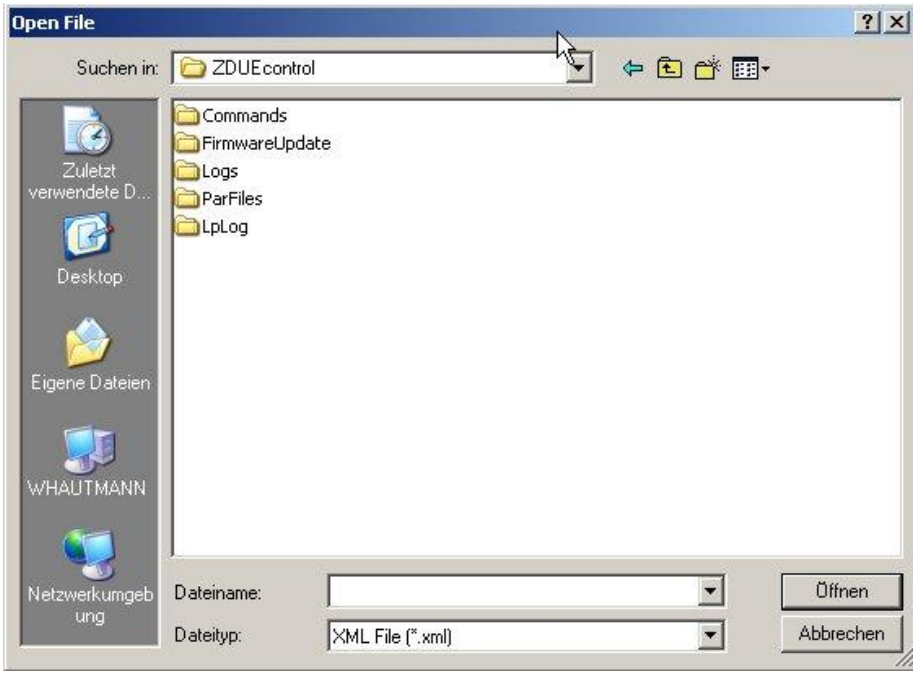
3.5 Opening and saving a parameter set

3.5.1 Opening a parameter set

In the "**File**" menu select the function **"Open Configuration File",**

or the corresponding icon in the Quick Menu:

This function offers the option of opening an existing parameter set file (with the file ending **.PAR*) in the sub-path *ParFiles* of the installation directory:



Load profile files (**.LG*), log files (**.LOG*) and register files (**.RD*) which are available in a format readable by ZDUEcontrol can be opened over this dialogue.

3.5.2 Saving a parameter set

In the **"File"** menu select the function **"Save Configuration File",**

or the corresponding icon in the Quick Menu:

This command enables the saving of the read data over a dialogue window.

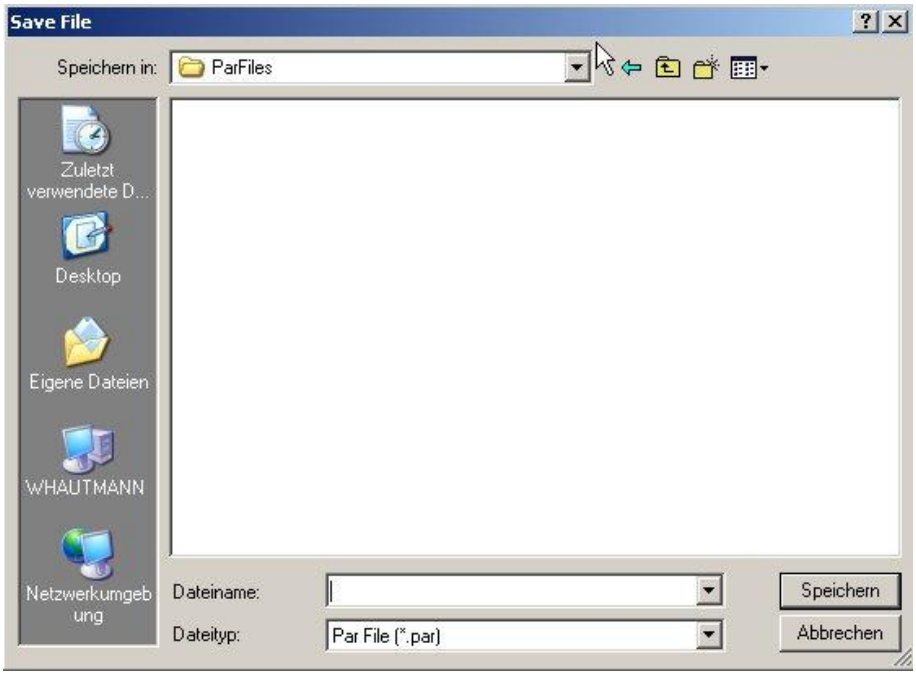
This data includes:

Parameter file: By default the file with the ending **.PAR* is saved.

Load profile contents: By default the file with the ending **.LP* is saved.

Register contents: By default the file with the ending **.RG* is saved.

GSM log: By default the file with the ending **.LOG* is saved.



Note:

A save is only possible if the corresponding data is first read from a ZDUE modem or has been opened over the menu item "Open Configuration File".

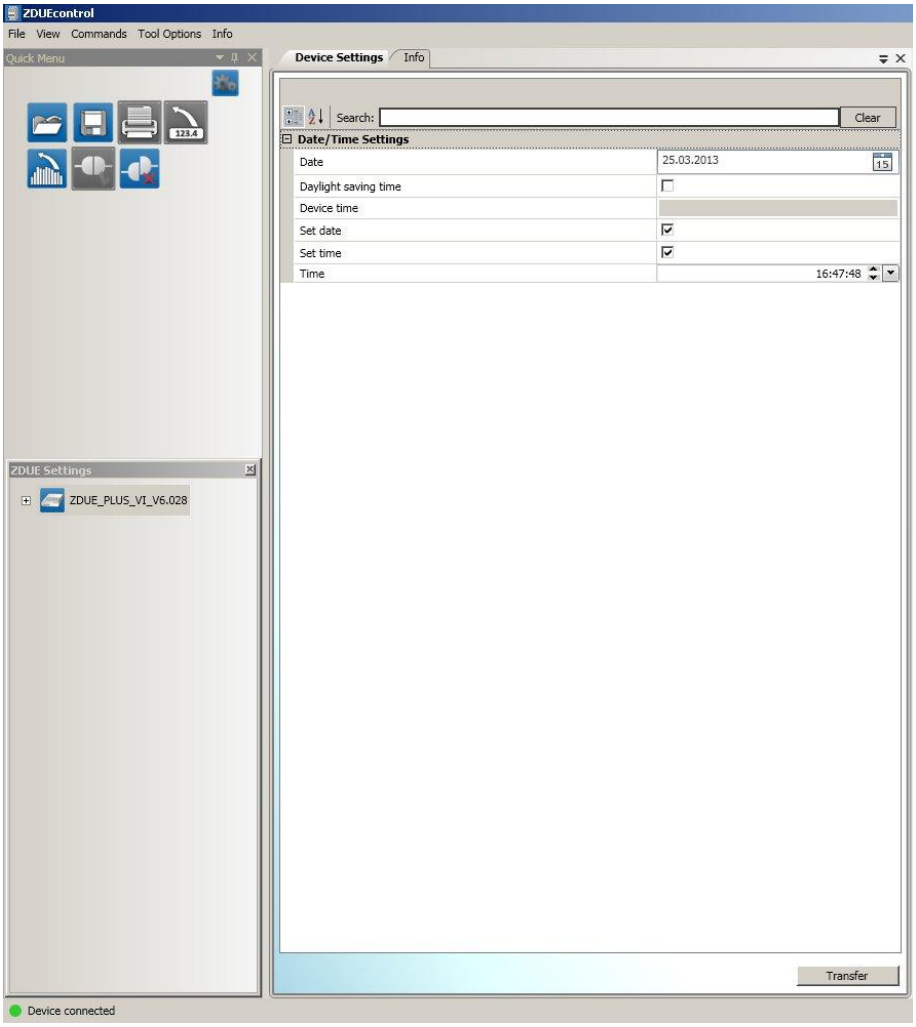
3.6 Modem commands (Commands)

3.6.1 Setting date/time (Read/Set Time)

Open the following in the menu bar under:

Commands -> Read/Set Time

In this area the real-time clock of the ZDUE modem is set. The automatic daylight saving time conversion can be set with the "**Daylight saving time**" checkbox.



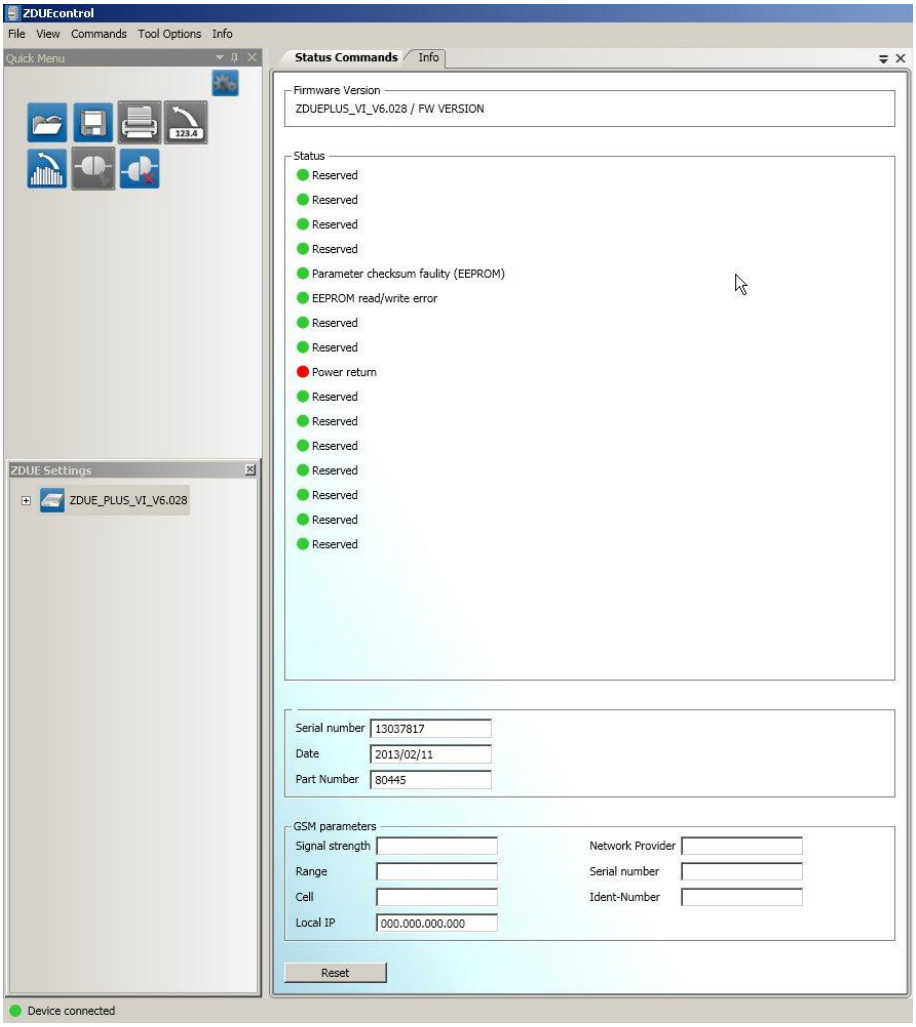
3.6.2 Read status display (Read and Display/Reset Status)

Open the following in the menu bar under:

Commands -> Read and Display/Reset Status

The status of the ZDUE modem is read in this opening dialogue. Any errors at the corresponding location are indicated with a red mark. Green marks indicate that the corresponding status is OK or there is no error.

With the *Reset* button, error statuses saved in the device are reset.



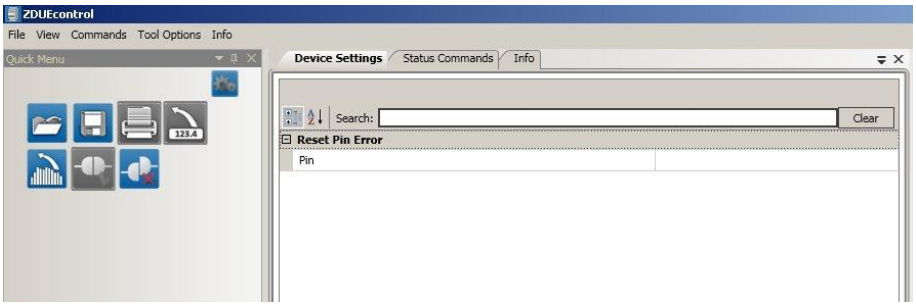
3.6.3 Reset PIN error (Reset PIN Error)

Open the following in the menu bar under:

Commands -> Reset PIN Error

If the ZDUE has the status PIN Error, recognisable over the Status LED, no additional attempt is made to report with the configured PIN. With the *Reset PIN Error* function, by entering the correct PIN in the ZDUE, the error status is deleted and the correct PIN is written into the configuration.

Please observe that the device must always be switched off before the SIM card is removed or inserted.



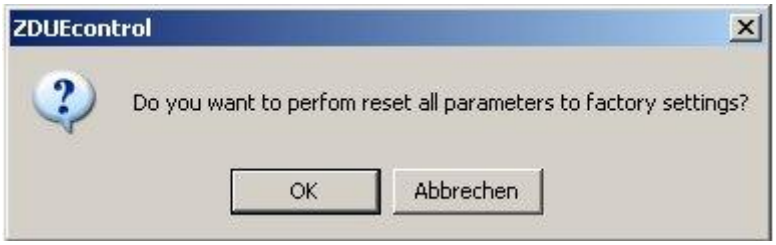
3.6.4 Resetting modem parameters (Set Modem Back to Factory Settings)

Open the following in the menu bar under:

Commands -> Set Modem Back to Factory Settings

With this function the ZDUE is reset to factory settings. The existing configuration is deleted.

The device then executes a restart and must be re-configured for operation.

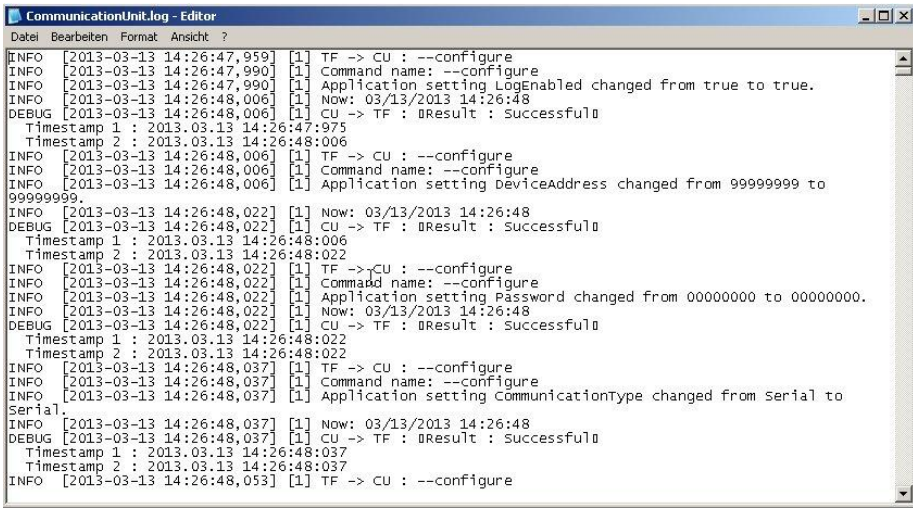


3.6.5 Communication log (Communication Log)

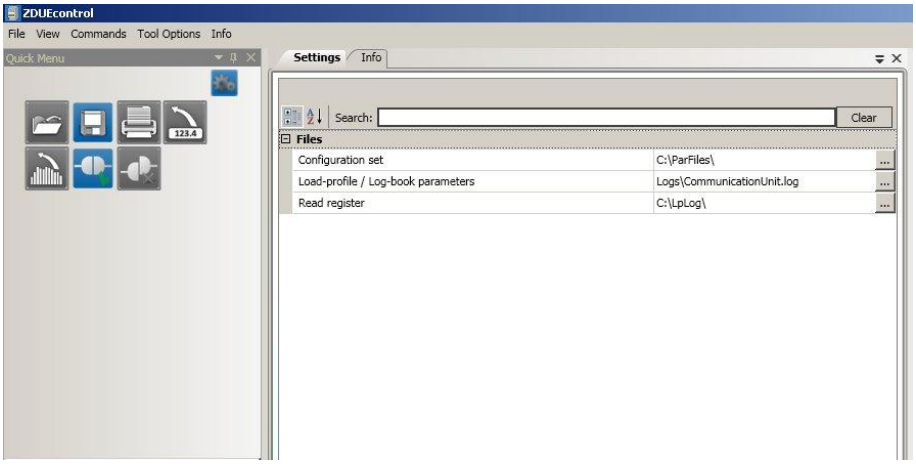
Open the following in the menu bar under:

Commands -> Communication Log

This function provides the option of viewing the log of the last communication between ZDUEcontrol and ZDUE modem. In the event of an error, this can be helpful for determining at which point an error in the communication occurred. The display takes place in an external editor (e.g. Notepad). ZDUEcontrol always saves the last 10 communication processes in the "**CommunicationUnit.log**" file.



The path of the log files as well as the configuration files can be changed later under "**Tool Options**"->"**Files Options**".



Note: This function is only active in offline mode.

(Disconnecting from device….)

3.6.6 Firmware update (Modem Firmware Update)

In the **"Commands"** menu, select the function **"Modem Firmware Update"** to load new firmware to the ZDUE modem.

Please observe that a firmware update can only be performed locally. For this purpose, select the COM port as the communication path under "**Tool Options**" in the "**Communications Options**" menu item. In addition, the two centre pins on the ZDUE modem must be bypassed on the service bar. (Jumper)

The update can only be started if there is no active connection to the ZDUE modem.

Please select the appropriate firmware file over the opening dialogue:

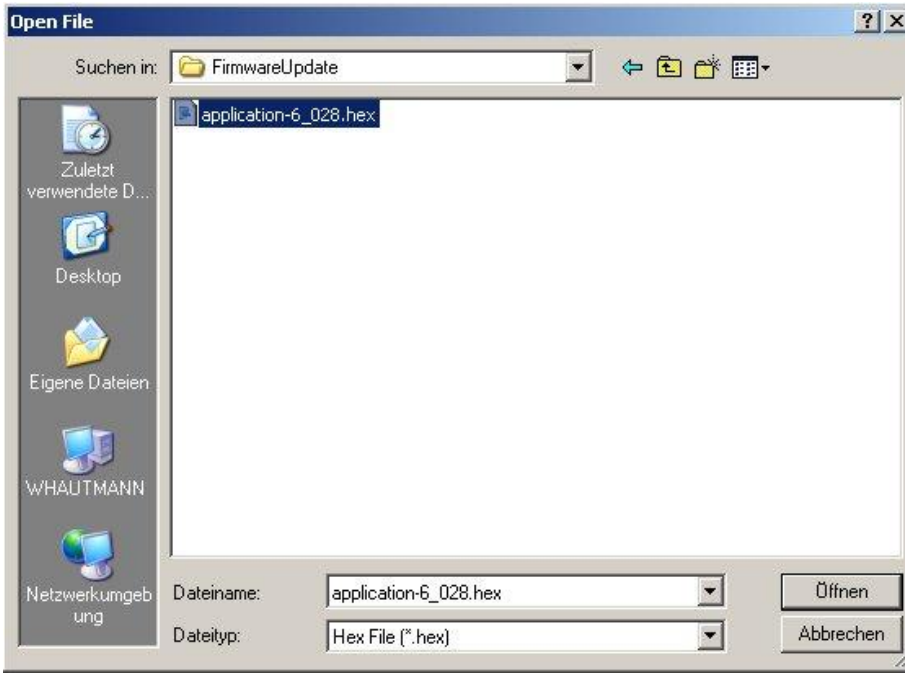
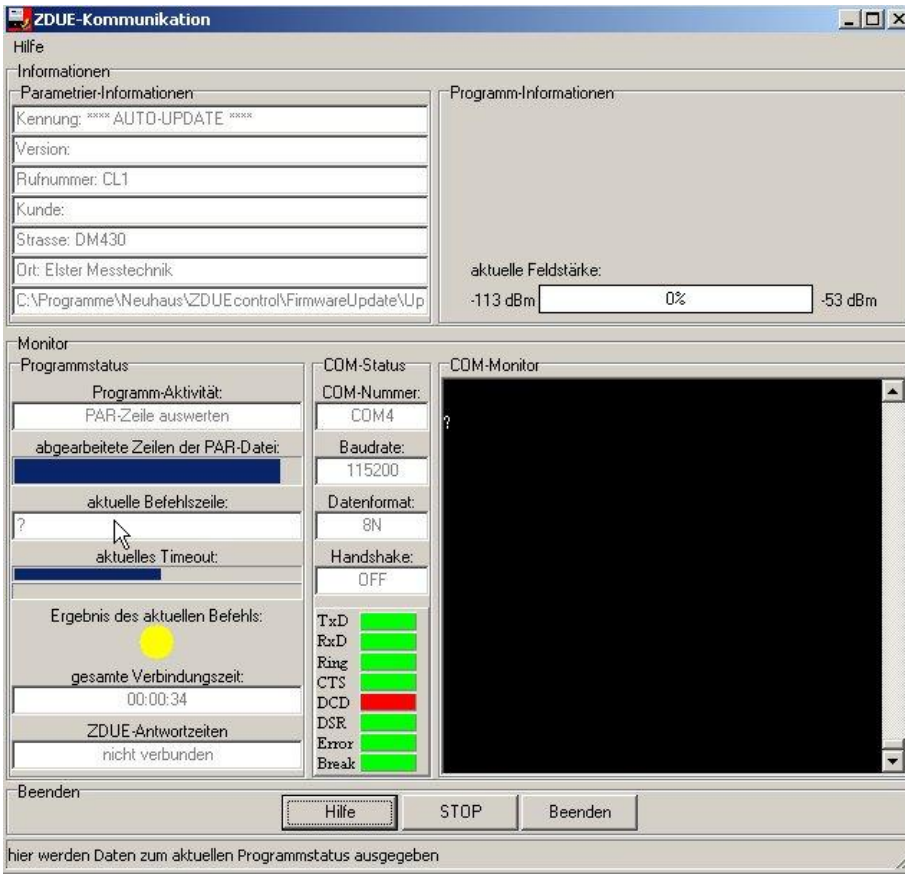


Figure 3-1: Firmware selection

The firmware files of the individual ZDUE models differ from each other. A file with the ending (*.hex) must be selected for the ZDUE-GPRS-PLUS-VI and for the ZDUE-GSM-PLUS-V.

After the selection a program that performs an update is started.

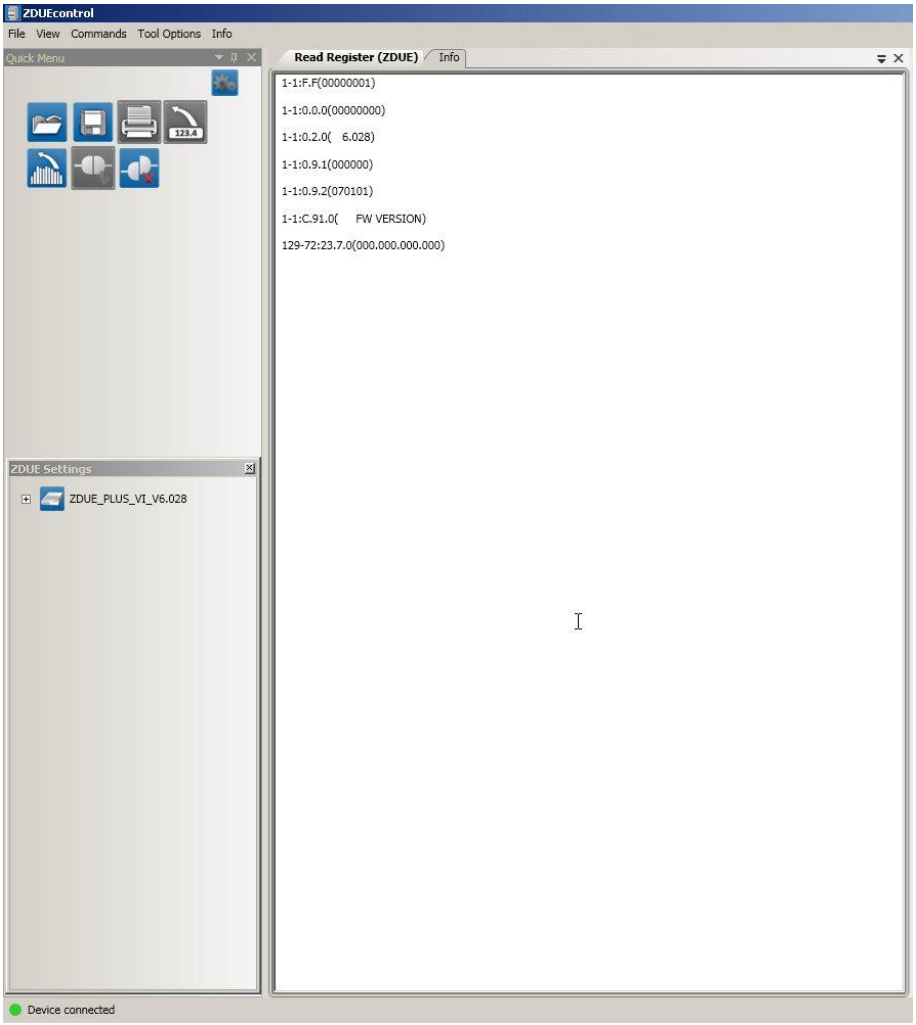


After the update the bridge of the two centre pins on the service bar is removed again.(Jumper)

3.6.7 ZDUE register reading (Read Register ZDUE)

With this function the register entries of the ZDUE modem can be read.

To read the ZDUE register, in the **"Commands"** menu, select the function **"Read Register ZDUE".**



3.6.8 Meter register reading (Read Register (meter))

The ZDUEcontrol can also read meters connected to the modem.

A reading of the meter with the ZDUEcontrol is only possible remotely. For this purpose, in the **"Tool Options"** menu, select the appropriate communication path with **"Communication Settings"**.

To read the meter register, in the **"Commands"** menu, select the function **"Read Register (meter)".**

In order to be able to access a meter, it must be addressed. ZDUEcontrol first asks the user for the IEC address of the meter to be read.

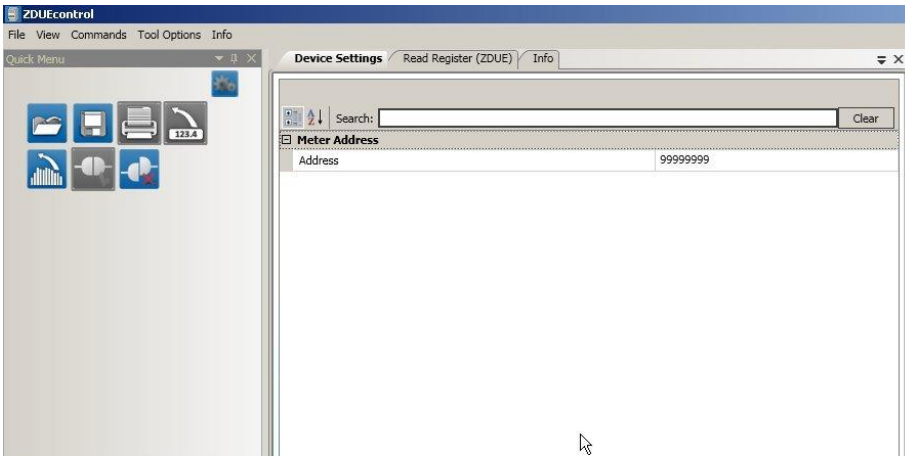


Figure 3-2: IEC address query

If only one meter is connected to the modem, the field for the address can also be left blank. In this case the query takes place with the string "**/?!**" and is answered by the connected meter depending on the IEC address. As soon as multiple meters are connected to the modem, they must be individually addressed over their unique IEC addresses.

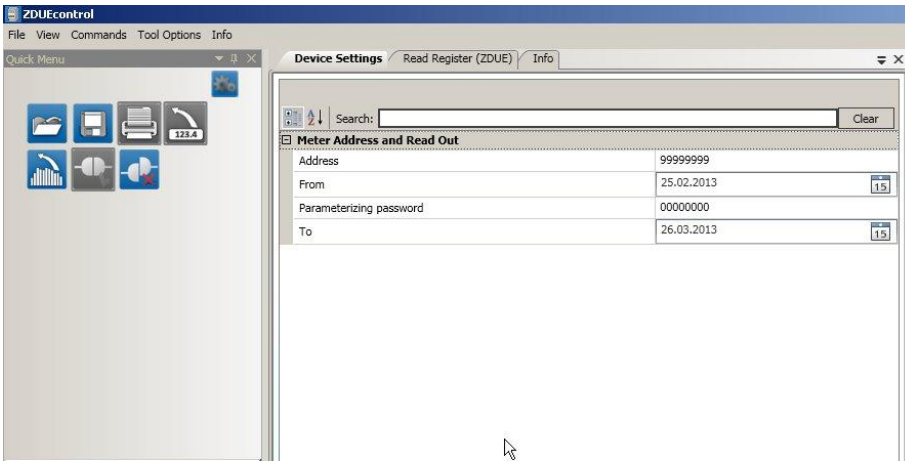
3.6.9 Meter load profile reading (Read Load Profile (meter)

The ZDUEcontrol can also read connected meters.

A reading of the meter with the ZDUEcontrol is only possible remotely. For this purpose, in the **"Tool Options"** menu, select the appropriate communication path with **"Communication Settings"**.

To read the meter register, in the **"Commands"** menu, select the function **"Read Register (meter)".**

In order to be able to access a meter, it must be addressed. ZDUEcontrol first asks the user for the IEC address of the meter to be read.



If only one meter is connected to the modem, the field for the address can also be left blank. In this case the query takes place with the string "**/?!**" and is answered by the connected meter depending on the IEC address. As soon as multiple meters are connected to the modem, they must be individually addressed over their unique IEC addresses.

Then the range of the load profile can be defined